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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/882,465	06/14/2001	Stuart M. Lindsay	MOL 0063 PA	8936

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Kilworth, Gottman, Hagan & Schaeff, L.L.P.
Suite 500
One Dayton Centre
Dayton, OH 45402-2023

EXAMINER

SMITH, JOHNNIE L

ART UNIT

PAPER NUMBER

2881

DATE MAILED: 06/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/882,465

Applicant(s)

LINDSAY ET AL.

Examiner

Johnnie L Smith II

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-28 is/are allowed.
- 6) ☒ Claim(s) 29-53 is/are rejected.
- 7) ☒ Claim(s) 44-53 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claims 44-53 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 45-53 refer to a scanning probe microscope in claim 44. Claim 44 does not disclose this said scanning probe microscope. Appropriate corrections are required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 34 and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by US patent 5,670,712 (Cleveland et al). In reference to claims 34 and 44, Cleveland discloses a scanning probe microscope comprising a sample stage, a scanning probe microscope configured to examine a surface of a sample supported

by said sample stage, a microscope coupling, and a sample stage support configured to suspend said sample stage from the microscope coupling, wherein said scanning probe microscope includes a solenoid driven cantilever assembly comprising: a cantilever unit; a probe tip; and a solenoid unit wherein the solenoid unit is configured to cause movement of said free end of said flexible cantilever (column 11 line 51-column 12 line 7, figures 1, 2, and 3a).

4. Claims 29-31 is rejected under 35 U.S.C. 102(b) as being anticipated by US patent 6,265,718 (Park et al). Park et al discloses a scanning probe microscope supported by a microscope chassis and configured to examine a surface of a sample supported by said sample stage, a microscope coupling supporting elements of said scanning probe microscope and a sample stage support configured to suspend said sample stage from said microscope coupling, and a slide-mounted stage assembly arranged to permit slidable movement of said sample stage and said sample stage support relative to said microscope chassis (figure 1, column 12 lines 44-65). Parke et al futrhe shows a scanning probe microscope wherein said slide-mounted stage assembly is further arranged to permit slidable movement of said scanning probe microscope relative to said microscope coupling and wherein said slide-mounted stage assembly defines a range of movement sufficient to

enable movement of said sample stage away from said microscope coupling (figure 1 column 12 line 44 through column 13 line 25).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 32-33 rejected under 35 U.S.C. 103(a) as being unpatentable over US patent 6,265,718 (Park et al). Park et al discloses all elements upon which the claims depend but fails to clearly disclose a scanning probe microscope wherein said slide-mounted stage assembly defines a range of movement sufficient to

enable removal and replacement of said sample stage independent of said microscope coupling and wherein said scanning probe microscope and said microscope coupling define portions of a sample stage enclosure. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Park et al to have sufficient movement with in the assembly enabling movement of said sample stage with respect to the assembly or enclosure.

8. Claims 35-43 and 45-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent 5,670,712 (Cleveland et al). In reference to claims 35-37, 43, 45-47 and 53, although Cleveland et al failed to disclosed a scanning probe microscope wherein said cantilever unit is mechanically coupled to said magnetic core of said solenoid unit, is secured to or secured proximate to said magnetic core of said solenoid unit, and wherein said cantilever unit is releasably secured to said magnetic core. Cleveland et al teaches a solenoid with a magnetic core (column 11 line 52-59). It would have been obvious to one of ordinary skill in the art to modify the teachings of Cleveland et al for the purpose of applying a magnetic field to the probe.

9. In reference to claims 38 and 48, although Cleveland et al failed to disclosed a scanning probe microscope wherein said magnetic core defines an extended

portion outside of said solenoid winding and wherein said cantilever unit is mechanically coupled to said extended portion of said magnetic core, It would have been obvious to one of ordinary skill in the art couple that cantilever to a portion of the magnetic core because Cleveland et al teaches the method of using magnetic fields and cantilevers.

10. In reference to claims 39-41 and 49-51, although Cleveland et al failed to disclosed a scanning probe microscope wherein said solenoid driven cantilever assembly further comprises an optically transparent element arranged to pass light to an upper side of said cantilever unit and wherein said magnetic core and said solenoid winding are positioned above said cantilever unit, wherein said solenoid driven cantilever assembly further comprises an optically transparent element arranged to pass light to said free end of said flexible cantilever, and wherein said solenoid winding is wound about portions of said optically transparent element and said magnetic core. Cleveland et al teaches providing a signal to light source to generate a beam to be reflected off the surface of the cantilever. It would have been obvious to one of ordinary skill in the art to have such an optically transparent element for the purpose of allowing the beam to reflect off the said cantilever.

Allowable Subject Matter

11. Claims 1-28 are allowed.

12. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to clearly teach or fairly suggest a combined scanning probe and optical microscope comprising: a sample stage defining an upper surface and a lower surface; a scanning probe microscope; an optical microscope; a microscope coupling mechanically coupling elements of said scanning probe microscope to elements of said optical microscope; and a sample stage support configured to isolate said sample stage from said optical microscope, wherein said sample stage, said scanning probe microscope, and said sample stage support define relatively high frequency mechanical resonances, and said optical microscope defines relatively low frequency mechanical resonances, and said microscope coupling, said sample stage, and said sample stage support are arranged to inhibit differential motion between said sample stage and said scanning probe microscope in the event of low frequency vibrations in said optical microscope as disclosed in claim 1. Claims 2-28 are allowable because of their dependencies.

13. Claims 42 and 52 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims. The prior art searched and cited fails to teach a cantilever unit comprising a cantilever support chip secured to the magnetic core of the claimed solenoid.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US patents 5,948,972 (Samsavar et al), 5,672,816 (Park et al), 5,705,814 (Young et al). All of the cited US patents contain art similar to that being claimed by applicant, more specifically, Scanning probe microscopes and methods.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Johnnie L Smith II whose telephone number is 703-305-0380. The examiner can normally be reached on Monday-Thursday 7-4 P.M. and Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 703-308-4116. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


JLSM
June 13, 2003

JOHN R. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800